California Regional Water Quality Control Board
Central Valley Region
Robert Schneider, Chair

Alan C. Lloyd, Ph.D.
Secretary for Environmental Protection

Fresno Branch Office
1685 E Street, Fresno, California 93706
(559) 445-5116 • Fax (559) 445-5910
http://www.waterboards.ca.gov/centralvalley

Arnold Schwarzenegger
Governor

TO:	Russell W. Walls Senior Engineer RCE No. 43140	**FROM:**	Alan Cregan Engineering Geologist PG No. 6164
DATE:	23 September 2005	**SIGNATURE:**	_____

SUBJECT: RESPONSE TO REVIEW OF ANNUAL MONITORING REPORT – SOUTHERN SAN JOAQUIN VALLEY WATER QUALITY COALITION – KINGS RIVER SUB-WATERSHED

Staff Review

On 1 April 2005, we received the Annual Monitoring Report (AMR) for the Southern San Joaquin Valley Water Quality Coalition's (SSJVWQC) Kings River Sub-watershed. This report was submitted by the SSJVWQC to meet the conditions of Resolution No. R5-2003-0105 and the associated Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) adopted by the Regional Board on 11 July 2003.

Regional Board staff met with the SSJWQC on 17 May 2005 to discuss preliminary comments and general deficiencies generated as part of the AMR review. Regional Board staff has continued the review of the AMR to evaluate the document for the required reporting conditions detailed in Resolution No. R5-2003-0105, the conditions set forth in the Kings River Sub-watershed's Monitoring and Reporting Program Plan (MRP Plan), the Quality Assurance Project Plan (QAPP), and to assess the quality of the data generated and the conclusions and recommendations presented. The review has been broken into three major categories: 1) a discussion of administrative aspects, 2) a discussion of analytical aspects, and 3) a discussion of waiver compliance.

Administrative Aspects

The Kings River Sub-watershed AMR was submitted on time, under appropriate cover letter, and included the major components required by Resolution No. R5-2003-0105. Sampling was preformed at the four sites set forth in the MRP Plan and the samples collected were analyzed for the required constituents. Quality assurance/quality control (QA/QC) samples were collected at the appropriate frequency and the analytical results were reported in table format as required. However, a few administrative deficiencies were noted.

Item 1: A detailed map of the Sub-watershed needs to be included in the AMR. The existing map provides information on only major features and does not include all water-bodies, canals, diversions, etc, or the boundary established for the Sub-watershed. The Conditional Waiver Program requires that the Coalition submit "Map(s) of the watershed area showing irrigated lands (including crop type), drainage, and discharge locations. Maps or discussion shall provide details of the watershed showing which fields are served by each drain." Additionally, the MRP Plan requires detailed maps showing the land use and sampling locations (Resolution No. R5-2003-0105 pages 11 and 13, and Order No. R5-2005-0833 page 13).

Item 2: Chain of custody documentation needs to be performed in accordance with Attachment A of Resolution No. R5-2003-0826, pages 5 and 6. Chain of custody documents included in the AMR did not always specify custody seals, number of bottles, transportation method (ice chest cooled to 4 degrees C), and included missing time and insufficient signatures. This problem was evident in the chain of custody for the 14 October 2004 sampling event, where samples were collected at 10:00 am and 11:55 am, but not submitted to the laboratory until 15 October 2004 at 9:25 am. This was a day after the samples were actually collected, and well past the holding time for bacteria.

Item 3: A detailed land use map needs to be included in the AMR as required on page 13 of Resolution No. R5-2003-0105 and Order No. R5-2005-0833. The land use map included in the MRP Plan is of insufficient scale and detail to provide the required information.

Item 4: Communication reports need to be promptly sent to the Regional Board when toxicity was detected or water quality objectives were exceeded. Communication reports needed to be submitted for: the 6 July 2004 irrigation samples collected from the Fresno and Lemoore Weirs (significantly reduced Selenastrum growth); the 9 August 2004 irrigation sampling event for Manning Avenue and Lemoore Weir (significantly reduced Selenastrum growth); and the 14 October 2004 Lemoore Weir sampling event (82.5 % survival to Hyalella).

The Fresno Weir site that exhibited statistically significant reduced growth to Selenastrum during the first irrigation-sampling event was switched to James Bypass for subsequent sampling events. This decision to move the sampling site was agreed to by Regional Board staff. However, because a Communication Report was not promptly submitted when toxicity was detected, staff's agreement to move the sampling site was made without the benefit of all relevant information, and a timely reevaluation could not be preformed. A letter addressed to Mr. Thomas Pinkos (marked Draft and included in Section 3 of the AMR) provided a partial response to Selenastrum toxicity. However, the letter was dated 24 February 2005 or 6 months after toxicity was initially detected. At a minimum, the Sub-watershed should have submitted a prompt Communication Report and performed the required follow-up re-sampling to the toxic events.

In the future, an Exceedance Report will need to be submitted when water quality objectives are exceeded at the monitoring locations. The Coalition Group shall submit an Exceedance Report by email to designated Water Board staff assigned to the Coalition Group or fax (916-464-4780) in writing within the next business day describing the exceedance, the follow-up monitoring, and analysis or other actions the Coalition Group may take to address the exceedance (Order No. R5-2005-0833, page 12).

Item 5: Molybdenum and toxaphene were the only constituents analyzed for in water samples collected from the Jackson Avenue site (both are 303 (d) listed for the Kings River). The reduced analytical suite was meant to supplement the results of the Surface Water Ambient Monitoring Program (SWAMP), which was sampling at the same location. However, SWAMP does not routinely perform toxicity testing and has not done so at the at the Jackson Avenue site. Additionally, SWAMP sampling is preformed on a rotational basis. No SWAMP sampling is currently being performed on the Kings River system.

Item 6: The pesticide use section of the AMR (page 9) is inadequate. Information needs to be provided on where, when, and how pesticides are being applied. At a minimum, Township, Range and Section, along with the types and amounts of chemicals applied on these acreages and when, must be presented (Order No. R5-2003-0826, page 3 and Order No. R5-2005-0833, page 3).

Analytical Aspects

Chemical analysis of samples collected for the AMR were run in accordance with the methods prescribed in Resolution No. R5-2003-0105 with the results presented in the required tabulated format at the beginning of each sampling event subsection. The review of the analytical results presented in the AMR was broken down into the following categories: physical parameters (including metals and nutrients), toxicity testing, quality control findings, and follow-up.

Item 7: Physical parameters were within excepted limits. However, samples submitted for E. Coli and total coliform analysis (irrigation samples collected on 6 July 2004 and 9 August 2004) did not provide a numerical result (analyzed for only the presence or absence of these bacteria). This situation was partially corrected for the 14 October 2004 and 3 January 2005 sampling events, where instead of analyzing for the presence or absence of E. Coli and total coliforms, the analysis was switched to provide a value for total coliforms only. The Kings River Sub-watershed QAPP specifies that E. Coli, fecal coliform, and total coliform should be analyzed.

An additional problem was identified with bacteria holding times. Holding times were exceeded for all coliform and E. Coli analysis preformed (6 hours for surface water verses the 3-4 days it actually took).

Item 8: Water column toxicity testing for the irrigation-sampling events detected statistically significant reductions in Selenastrum growth, as compared with the control group (6 July 2004 at Fresno and Lemoore Weirs, and 9 August 2004 at the Lemoore Weir and Manning Avenue). Mortality to Hyalella was detected at the Lemoore Weir during the sediment sampling conducted 14 October 2004 (82.5% survival). When monitoring results indicate that water quality objectives are exceeded in the surface waters of the Coalition Group area, the Coalition Group needed to submit a Communication Report (specified on page 12 of Resolution No. R5-2003-0826) or in the future, an Exceedance Report (Order No. R5-2005-0833, page 12). Failure to do so is a violation of the terms of the Conditional Waiver.

A letter addressed to Mr. Thomas Pinkos (marked Draft and included in Section 3 of the AMR) states that Sierra Foothill Laboratories informed the Sub-watershed that the poor growth response

of the algae was due to a mineral deficiency in the source water, and not due to toxic substances in the water. However, no evidence was presented to support this conclusion and the letter made no mention of the Hyalella toxicity (14 October 2004).

Item 9: Field quality control samples were collected and analyzed at the appropriate frequency for physical parameters. No toxicity QA/QC samples were collected or analyzed. As the number of sampling events increases in the coming season, toxicity QA/QC samples will need to be collected and analyzed on the required 5% basis.

Item 10: Follow-up studies to toxic events were not preformed. No Toxicity Identification Evaluation (TIE), follow-up sampling, or changes to management practices were done. A draft copy of a letter regarding Kings River Sub-watershed algae toxicity results for July 2004 to January 2005 was included in Section 3 of the AMR. This document states that Sierra Foothill Laboratories recommended that no less than three sampling events be conducted to determine the persistence of the reduced growth before conducting additional follow up procedures. Contrary to what the laboratory may have said, the Monitoring and Reporting Program, Order No. R5-2003-0105 (page 5) that was in effect at the time of the exceedance, states when toxicity is detected, a TIE and chemical monitoring shall be conducted to determine the cause of toxicity. At a minimum, a Phase 1 TIE should have been conducted to determine the general class of chemical causing the toxicity (the 50% toxicity trigger for performing a TIE had not been adopted at this time). The results of the minimum TIE would have been used to determine the type of chemical monitoring necessary to identify the specific agents causing toxicity. In addition to TIEs, sites identified as toxic in the initial screen, shall be re-sampled to estimate the duration of the toxic event. Samples should also be collected upstream of the initial sampling point to help determine the source of the toxicity. Additionally, information must be collected from dischargers on the type of management practices that are being used, the degree to which they are being implemented within the watershed, and how effective they are in protecting waters of the State through all phases of monitoring (Order No. R5-2003-0105, page 5, and Order No. R5-2005-0833, page 5). Communication Reports were the method by which the Regional Board was to be notified of a water quality exceedance. Notification needed to be prompt. At a minimum, the Communication Report should have included: a description of the management practice(s) being evaluated; methodology for evaluating the effectiveness of the practice (including sampling and QA/QC plans); and the involvement by stakeholders and agencies in developing, implementing, and evaluating the project (Monitoring and Reporting Program, Order No. R5-2003-0105, pages 12 and 13). In the future, an Exceedance Report will need to be submitted within the next business day when water quality objectives are exceeded at the monitoring locations, and the required additional sampling needs to be performed.

Waiver Compliance

Certain aspects of the Conditional Waiver Program may not have been completely addressed in the Watershed Evaluation, QAPP, and MRP Plan, and subsequently, were not included in the AMR. While these documents were deemed complete by the Regional Board on 13 August 2004, it is staff's position that additional information and/or actions should be undertaken at this time in order to fully comply with the Conditional Waiver Program. These actions include:

increasing the number of sampling points; the frequency of sampling; and actions taken to address water quality impacts.

Item 11: Monitoring and Reporting Program, Order No. R5-2003-0105 (pages 8 and 10) and Order No. R5-2005-0833 (page 9), state that the number of monitoring sites shall be based on acreages and watershed characteristics sufficient to allow for the calculation of load discharged for every waste parameter. A map of the region indicates that only 3 sites (Manning Avenue, Lemoore Weir and Jackson Avenue) are routinely monitored for an approximately 80-mile stretch of the Kings River. Only two of the three sites actually had samples collected and analyzed for water column and sediment toxicity (Manning Avenue and Lemoore). The Monitoring and Reporting Program, Order No. R5-2003-0105 and Order No. R5-2005-0833, (page 10) requires that all major drainages must be part of baseline monitoring. At least 20% of the intermediate drainages must be monitored during the first year and the second 20% the second year, etc. The review of the AMR found no mention of additional sampling proposed for either the major drainages or on the required 20% of the intermediate drainages. This is inconsistent with the terms of the waiver and needs to be addressed.

A review of area topographic maps and aerial photographs have identified the following water bodies: Holland Creek which flows through predominantly citrus groves for a distance of approximately 4 miles to it's confluence with the Kings River; Wahtoke Creek which flows approximately 10 miles through irrigated farmland to the Kings River; Travers Creek which flows into Travers Canal, which in turn appears to empty into the Kings River (approximately 17 miles through a variety of agriculture); Murphy Slough off of Cole slough that flows approximately 19 miles through row crops to the Fresno Slough; Green Slough which flows approximately 7 miles through row crops and dairy lands to where it returns to the south fork of the Kings River; Faull Slough that passes through walnuts, peaches, nectarines and row crops; Cole Slough approximately 7 miles long; and Byrd Slough, Cameron Slough, and Collins Slough which all parallel each other and pass through irrigated pasture and tree fruit. In addition to these natural water bodies, a number of canals appear to return flow to the Kings River (Lemoore Canal, Grant Canal, and Crosscut Canal), the Fresno Slough (Burrel Ditch, and Turner Ditch), and to Cross Creek (Lovell, Loper, Trout, and Button Ditches).

The Phase II Irrigated Agriculture Monitoring Program (UC Davis, 29 January 2005 and 20 May 2005) detected statistically significant toxicity to Selenastrum in irrigation samples collected from Button Ditch (0% survival for Ceriodaphnia), the Kings River at Jackson Avenue, and the West Reedley Ditch at Adams Avenue (this site also had a DO level of 4.2 mg/L). In addition to the Selenastrum toxicity, Chlorpyrifos was also detected at the above locations and in storm-water flows at the Kings River at Reed Avenue. The Reed Avenue site also had detectable concentrations of diazinon (0.013 to 0.026 ug/L) and simazine (0.030 to 0.111 ug/L). In response to the toxicity detected in these waterways, it is staff's position that Button Ditch and West Reedly Ditch should be included in the sampling program.

Item 12: The frequency of sampling set forth in the Conditional Waiver Program is once a month during the irrigation season and twice during the storm season. Additionally, when toxicity is discovered, re-sampling is to be performed and samples are to be collected upstream to aid in determining the limits of toxicity. The Kings River Sub-watershed AMR does not contain any

information regarding resampling, or sampling upstream in response to the detected toxic events (reduced growth to Selenastrum and mortality to Hyalella).

Item 13: The Conditional Waiver Program required that when monitoring results indicate that water quality objectives were exceeded in the surface waters of the Coalition Group area, the Coalition Group should have submitted a Communication Report describing how it would have evaluated the effectiveness of one or more management practice(s) at preventing discharge of constituents of concern to surface waters. The selection of management practice evaluation projects should have included consideration of the contribution of target constituents of concern to known water quality impairments, potential application of the management practices over a broad geographic area and large spectrum of crops, and ease and immediacy of possible implementation.

Order No. R5-2005-0833 (page 12) requires that the MRP Plan shall provide an Implementation Plan for management practices in the watershed and identify pilot projects for the implementation of management practices on prioritized sub-watersheds. The Coalition Group shall develop an Implementation Plan to identify and track the progress of water quality management practices within the watershed when a water quality exceedance is found. This plan may address water quality issues related to the discharge of irrigation return flows separately from stormwater discharges and shall include a schedule for implementation of management practices that may include, but is not limited to, grower education, technical and financial assistance.